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INFORMATION REPORT

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CENTRAL INTELLIGENCE AGENCY

COUNTRY

USSR

SUBJECT

Aeronautical Educational System and Installations

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SUPPLEMENT TO REPORT

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THIS IS UNEVALUATED INFORMATION

1. The Academy of Science of the USSR (Akademia Nauk SSR) was founded in 1725 and today's Soviet education, research and development is still centralized as it was in Czarist Russia. The Soviets, with 200.2 million inhabitants, produce annually one million low-grade pupils and approximately 200 thousand who leave school after ten years. Nearly two million students at present are studying in 760-790 higher educational institutes and 33 universities. There are according to latest count, 193 technical bodies of learning which teach 200 different subjects. Among these there are roughly 20 thousand aeronautical students, i.e. three times as many as in the US. This number will increase further. The latest official Soviet information on the subject is this: In the course of the current Five-Year Plan the number of technical students will double, i.e. be 1.3 million in 1960. This was mentioned by the Minister for Higher Education, V Yelyutin in April 1956.
2. Education, science and research is entirely a state controlled and initiated duty. It starts with every Soviet citizen at the age of seven, both at school and in Communist youth organizations such as "Young Pioneers", where one of the most popular subjects is model building of aircraft. Since 1946 everything in learning, teaching and science is under the Ministry for Higher Education. Very few exceptions: i.e. Air Force institutes and institutes of various ministries (i.e. for aircraft production) do exist. The armed forces have their Main Administration for Higher Education called Guvvuz. The man in charge is at the same time a Deputy Minister of the Ministry for Higher Education. Under Guvvuz are all schools of the armed forces, navy (including air forces), academies and institutes.
3. The all embracing Academy of the Sciences of the USSR has eight main departments among which Physics and Mathematics (No 1) and Technology (No 5) are the most important for aeronautical research. The Academy comprises at least 40-50 committees and commissions, 38 research stations, 14 museums, four observatories, 52 institutes and 15 specialized laboratories. The latest list of scientists names 146 full members of high calibre and 255 corresponding members. The President of the Academy is Alexander Nesmeyanov. Among the known members the following are noted for connection with aeronautical subjects:
 - a. A F Joffe (physics and also a member of the Presidium)
 - b. Blagonaravov (automatic weapons)
 - c. Peter L Kapitsa (physics)
 - d. A A Mikulin (jet and piston aero engines)

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- e. B N Yuriev (helicopters, aerodynamics)
- f. S A Christianovich (hydro and aerodynamics)
- g. L I Sedov (hydrodynamics)
- h. A N Tupolev (aircraft, head of TsAGI and doyen of Soviet aircraft designers)
- i. A S Yakovlev (aircraft and helicopter designer)
- j. V Ya Klimov (aircraft engines, corresponding member)
- k. Y I Frenkel (physics)

Various others are excluded from the official list because of their secret work. Of the bodies of the Academy which are of interest for aeronautical sciences there are:

- a. Department of Physics and Mathematics, Pyzhevsky pereulok 3, Moscow
Secretary: M V Keldych (prior to 1952 - A F Joffe) Attached to this department are:
 - b. Institute of Physical Problems: Kalushskoye Chaussee 32, Moscow, founded 1934, director: P L Kapitsa
 - c. Commission on Cosmic Rays: Kal Chaussee, Moscow, founded 1934, chairman A I Alikhanov
 - d. Commission on Isotopes: Staromonetny pereulok 35, Moscow.
4. No aeronautical institutes existed before the 1917 Revolution. There were only pilot courses held at Moscow and Petrograd (Leningrad). Founding of the first Soviet Air Force Institute came about in 1918 and was on the initiative of the famous aeronautical scientist NE Zhukovsky (Joukovski) who, together with his pupil Chaplygin, laid the basis for modern aerodynamics by the (Chaplygin) - Joukovsky formula. One year later [1919] the Air Force Technical Institute was founded at Moscow, which became in 1920 the Institute for Engineers of the then Red Air Fleet, out of which again were created still later the two existing air academies. The largest aeronautical institute possibly the largest in the world, is the "Serge Ordzhonikidze" Institute at Moscow. This had (in 1955) 7,500 students. It was created from the "Higschool for Aeromechanics" in 193 . The critical year of 1948, which brought the introduction of the jet to the SAF, saw the founding of the first Academy of the Aircraft Industry at Moscow. This academy is unique, in that it trains only leading aircraft industry personnel.
5. The "rank and file" institutes, the most important being centered at Moscow, have one thing in common. They are not only teaching institutes but also scientific bodies for research work. Not only do the professors carry on this work but also the students who, for this very purpose, are organized into the "Scientific Technical Students Association" (Antos-Aviatsionnoe Nauknotekhnicheskoe Obshchestvo Studentov). Many so called "aspiranti" are assisting the professors to train scientific teachers. The most important aeronautical institutes are:
- a. Aeronautical Institute called "Serge Ordzhonikidze" at Moscow, Volokolamskoye Chaussee 18. It can accommodate from 6,500 to 7,500 students. Classes are usually full.
 - b. Institute for Aeronautical Technology at Moscow, Pl Borby 31-33, headed by Professor N V Indzemtse. Specialized in aircraft production techniques. Some 3,500 students.
 - c. Aeronautical Institute at Kharkov (Kh A I), at Kharkov, Ul Sumskaya 18-20. Specialized in aircraft frames and engines. It was formerly at Kharkov, Pomerki 27 and was called "Ossoviakhim" (the predecessor of the DOSAAF pre-military training organization which has a very large aeronautical branch).
 - d. Aeronautical Institute Kuibyshev at Kuibyshev, Ul Kooperativnaya 110. This institute, however small in comparison to those at Moscow, gained in importance after World War II, because of the large new production centers for aircraft and jet engines at Kuibyshev. It trains students in aircraft construction, jet techniques and rocket and prop-jet engines. The works at Kuibyshev were among the

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first which switched production from piston to jet engines. Approximately two thousand students.

- e. Aeronautical Institute at Kazan, Karl Marx Ul 10. It is important because in the aircraft works in the town of Kazan four engined aircraft are being built. There is also important prop-jet development.
- f. Aeronautical Institute at Gorky. Importance and scope of work unknown.
- g. Aeronautical Institute for Aircraft Equipment at Leningrad at Moskovskoye Chaussee 74. This is the largest institute of its kind in the USSR.
- h. Institute for Aero-photography and Geodesy at Novosibirsk, Ul Krylova 24. It has been suggested that at Novosibirsk there is an institute for rockets.
- i. Institute for Aerial Photography (aerial survey) and Cartography at Moscow. Headed by Professor P T Stepanov.
- j. Aeronautical Institute at Tashkent, Ul Kuibyshev 8.
- k. Aeronautical Institute at Ufa Ul Lenina 61. Important for aircraft engine studies because of the large engine works near the town of Ufa. Possibly approximately one thousand students.

6. Training in the above institutes takes usually $5\frac{1}{2}$ years. At the Academy of Aircraft Industry, however, the normal course lasts only two years because only trained personnel are trained there in specialities. Students work hard, very much harder as a rule than in western countries. The system is sinister as Party loyalty, knowledge in Marxist and Leninist doctrine is obligatory. Students wear uniforms on and off duty. Equipment at the institutes is generally good, but not excellent according to Western standards - books and other learning materials are scarce. A general complaint is that new editions are soon sold out. As a rule, editions are very small on everything scientific. Those students of special promise receive scholarships named after Lenin, Molotov, Voroshilov, Ordzhonikidze, Chaplygin and Polikarpov and nearly every promising talent among students is encouraged.

7. All research and test institutes for the aircraft industry are under the direct supervision of the Ministry of Aircraft Production (MAP) and are greatly centralized. There is a Central Institute for each of the following subjects:

- a. Aerohydrodynamic Institute (TsAGI) was founded in 1923 at Moscow and has several branch institutes at other towns. It is headed by Professor A N Tupolev. Most Soviet aircraft and helicopters of the past three decades have been developed and tested there. It can be best described as the aircraft testing organization of the MAP under the Minister, P V Dementyev, who visited the UK recently. The flight testing department of TsAGI Moscow is located at the airfield Ramenskoye, near Moscow at the river bank side of the Moskva.
- b. Aero-engine Central Institute called "Baranov" (known as TsIAM) at Moscow also has several branches at various other cities but the main TsIAM is at Moscow. Apart from branches it has also prepared an emergency location in case of war which is typical for all other Central Institutes of MAP. TsIAM is organized in four major departments:

I. Direction and main administration.

II. Various design offices (K B's with numbers), i.e. K B 6 for jet engines and laboratories (also with numbers), i.e. K B 24 does exist.)

III. Departments for pilot production

IV. Auxiliary and special departments which include department Number 1 (Security) Number 29 (Confidential correspondence). The security department does not come under the Director of the institute but under the proper ministry (formerly the MVD but now the State Commission for

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Security). Another typical department (or rather section in all institutes) is the branch for technical information which includes the library, archives and the printing shop for publications of the institute. Three more Central Institutes are existing: the VIAM for testing of materials, the institute for aircraft equipment and the third for aircraft fuels and lubricants. The so-called Tsentralnii Konstruktsion Burea (TsKB) is directly under the Ministry of Aircraft Production. It approves all aircraft design from various pilot aircraft works, institutes including the TsAGI before they are ordered into limited and later series production.

8. Military education is handled by a special department of the Ministry of Defense, called GUVVUZ (Main Administration for Higher Military Training). The organization of all colleges and institutions of the forces, here mainly Air Force, is very similar, though sometimes not as detailed and intricate, as the one of the largest Air Force academy which is the "Zhukovsky Air Engineering Academy", also known as the VVIAZ at Moscow. It was the VVIAZ which was visited by General Matthew Twining on 26 Jun 56. Since 1940 only air officers of the Air Engineering Service (EAS) have been trained there. Among the four deputies of the chief of the VVIAZ, usually a Major General of the EAS (changed at least five times since 1933, several being arrested or dismissed, among them Todorsky in 1937 purge), there is the inevitable political commissar who is usually a General by rank, and a teaching and scientific deputy who is also normally a general of the EAS. Although officers of the EAS have the same basic ranks as have all the forces, the rank is harder to attain and in fact a Major of the EAS is above the Lieutenant colonel of the troop services. Perhaps the second academy in importance is the Air Academy at Monino (near Moscow). It trains command and navigating personnel of the Air Force, including the navy air forces. Strategy and tactics are taught there. The Kuibyshev Military Engineering Academy at Kuibyshev is perhaps the largest of all academies of the forces. It gives such subjects as atomic-warfare, aircraft, bridge building, in fact every technical subject of the forces, including some of importance to the Air Force. It is known that a branch of this academy was used to train East German officers of the nucleus Luftwaffe of Communist Germany. Also important, though not an Air Force academy in the strict sense, is the "Dzhershinsky Artillery Academy" in Moscow. This trains, among others, specialists in rocket warfare (ground weapons and ground to air). The Main Administration of the Air Forces (GUVVS), which is a department of the Ministry of Defense has among its 21 or more chief departments one for training and education, one for scientific research and one for experimental aircraft.

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